

REMARKS/ARGUMENTS

Claims 18-25, 27-33, and 35-36 are pending. Claims 24-26, 34, 37, and 38 have been canceled without disclaimer or prejudice.

Claims 18-20, 23-27, 29-31, and 34-35 were rejected under 35 U.S.C. § 102(e) for allegedly being anticipated by Gagne et al., U.S. Patent No. 6,401,178.

Claims 21-22, 28, 32-33, and 36 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Gagne et al. in view of Misinai et al., U.S. Patent No. 5,758,125.

The claims have been amended to more clearly distinguish the cited art.

Section 102 Rejection of Claims 18, 19, 29, 30

The present invention is directed to data sharing in a computer system. Aspects of the present invention as recited independent claim 18 include forming a first duplex state between a first disk unit and a second disk unit, wherein data for a write request from a first computer is stored to both the first disk unit and to the second disk unit, and wherein data for a write request from a second computer is stored to a third disk unit.

Then, a simplex state is formed wherein data of a write request from the first computer is stored only to the first disk unit, while data of a write request from the second computer is stored to the second disk unit.

Then, a second duplex state is formed between the first disk unit and the third disk unit, wherein data of a write request from the first computer is stored to both the first disk unit and to the third disk unit, while data of a write request from the second computer is stored to the second disk unit.

Kindly note that the second computer switches between the third and second disk units depending on which duplex state is formed. Gagne et al. clearly do not show this aspect of the present invention.

See also independent claim 29 and its dependent claim 30.

Gagne et al. was cited at column 2, lines 62-67 and column 3, lines 8-21 for disclosing a duplex state. Gagne et al. describe:

“a data storage facility comprises first, second and third data stores that interact individually with first, second and third programs respectively. Each of the second and third data stores can be selectively connected as mirrors for the first data store at different times. ... When it is desired to update the data in one of the second and third data stores, it is re-established as a mirror” *Col. 2, lines 56-67.*

Gagne et al. describe the details of the ESTABLISH command which is used to establish the duplex state in column 7, line 8 to column 8, line 21. The ESTABLISH command identifies a standard device, such as the standard device 31, and a BCV device, such as one of the BCV devices 33 or 35. *Col. 7, lines 13-16.* Some initialization steps are performed as described in column 7, lines 21 to 39. Then a sequence of steps are performed to effectively isolate the selected BCV volume from any corresponding application and connects the selected BCV device as a mirror to the standard device 31. *Id at lines 40-43.* “Further communications between the BCV device and the program operating with it are no longer possible so step 107 discards all WRITE PENDING operations to the selected BCV device. Step 108 completes the isolation by setting to a NOT READY (NR) the selected BCV device in its function as a storage facility for a corresponding application.” *Id at lines 60-65.*

Gagne et al. do not show that the isolated program is connected with another BCV device when the ESTABLISH command is performed to establish a duplex state. In fact, it is not until a SPLIT command is issued that the isolate program is reconnected with its BCV device. Thus,

“in FIG. 1 if the ESTABLISH command produces a BCV relationship between the standard device 31 and the BCV(1) device 33, the SPLIT command will isolate the standard and BCV devices 31 and 33 and reconnect the device 33 with the replicated data set to the HOST APP B application 23.” *Col. 8, lines 28-34.*

When HOST APP B is isolated from BCV device 33 during the ESTABLISH command, it is not connected to another BCV device. It is, however, reconnected to BCV device 33 during a SPLIT command. Gagne et al. therefore do not teach or suggest a first duplex state

between a first and second storage device during which time a second computer accesses a third storage device, and a second duplex state between the first and third storage device during which time the second computer accesses the second storage device. The section 102 rejection of claims 18, 19, 29, and 30 is believed to be overcome.

Section 102 Rejection of Claims 20, 23, 27, 31, 34, and 35

An aspect of the present invention as recited independent claim 20 include forming a first duplex state between a first disk unit and a second disk unit, wherein data for a write request from a first computer is stored to both the first disk unit and to the second disk unit, and wherein data for a write request from a second computer is stored to a fourth disk unit. Then, a simplex state is formed wherein data of a write request from the first computer is stored only to the first disk unit. Then, in the simplex state, data stored in the second disk unit is copied to a third disk unit and, subsequent to the copying, the third disk unit is accessed from the second computer. Kindly note that the second computer switches from the fourth disk unit during the duplex state, and then to the third disk unit after the simplex state is formed and data copying from the second disk unit to the third disk unit is performed. See also independent claim 27.

As discussed above, Gagne et al. do not show a second computer that accesses a fourth disk unit during a duplex state and then accesses a third disk unit during a simplex state. When a duplex state is formed in accordance with Gagne et al., “[f]urther communications between the BCV device and the program operating with it are no longer possible so step 107 discards all WRITE PENDING operations to the selected BCV device. Step 108 completes the isolation by setting to a NOT READY (NR) the selected BCV device in its function as a storage facility for a corresponding application.” *Id at lines 60-65.*

Gagne et al. do not disclose or suggest that isolate program is made to access another BCV device. In fact, it is not until the SPLIT command is executed that the program is reconnected to the BCV device; “the SPLIT command will isolate the standard and BCV devices 31 and 33 and reconnect the device 33 with the replicated data set to the HOST APP B application 23.” *Col. 8, lines 31-34.* When HOST APP B is isolated from BCV device 33 during the ESTABLISH command, it is not connected to another BCV device. It is, however,

reconnected to BCV device 33 during a SPLIT command. Gagne et al. therefore do not teach or suggest a second computer that accessing a fourth disk unit during a duplex state and then accessing a third disk unit during a simplex state.

In addition, Gagne et al. do not show or suggest copying data from the first disk unit to the third disk unit during the simplex state. A review of the description of the SPLIT command given by Gagne et al. does not reveal such a copying step. This aspect of the present invention is not shown or suggested by Gagne et al.

Gagne et al. do not show the specific combination of steps recited in independent claims 20 and 27. For at least this reason the Section 102 rejection of claims 20, 23, 27, 31, 34, and 35 is believed to be overcome for at least these reasons.

Section 103 Rejection of Claims 21-22, 28, 32-33, and 36

Misinai et al. was cited in support of the Section 103 rejection. Misinai et al. do not show the foregoing discussed aspects of the present invention. Claims 21-22, 28, 32-33, and 36 are therefore believed to be allowable based on the allowability of their respective base claims.

CONCLUSION

In view of the foregoing, all claims now pending in this Application are believed to be in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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